

1. Write a Java program to print the string data in initcap format?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        String input = "hello world from java 8";  
        String result = Arrays.stream(input.split(" "))  
                                .map(word -> word.substring(0, 1).toUpperCase() + word.substring(1))  
                                .collect(Collectors.joining(" "));  
        System.out.println(result); // Output: Hello World From Java 8  
    }  
}
```

2. How do you find frequency of each character in a string using Java 8 streams?

```
5 public class SampleTest {  
7  
3= public static void main(String[] args) {  
9     String inputString = "Java Concept Of The Day";  
9  
1     Map<Character, Long> charCountMap =  
2         inputString.chars()  
3             .mapToObj(c -> (char) c)  
4             .collect(Collectors.groupingBy(word -> word, Collectors.counting()));  
5     System.out.println(charCountMap); //{ =4, a=3, c=1, C=1, D=1, e=2, f=1, h=1, J=1, n=1, O=1, o=1, p=1, T=1, t=1, v=1, y=1}  
5  
7 }  
3  
9 }
```

3. How do you find frequency of each element in an array or a list?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        List<String> stationeryList = Arrays.asList("Pen", "Eraser", "Note Book", "Pen", "Pencil", "Stapler", "Note Book", "Pencil");  
        Map<String, Long> stationeryCountMap =  
            stationeryList.stream().collect(Collectors.groupingBy(word -> word, Collectors.counting()));  
        System.out.println(stationeryCountMap); //{Pen=2, Stapler=1, Pencil=2, Note Book=2, Eraser=1}  
    }  
}
```

4. How do you sort the given list of decimals in reverse order?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        List<Double> decimalList = Arrays.asList(12.45, 23.58, 17.13, 42.89, 33.78, 71.85, 56.98, 21.12);  
        decimalList.stream().sorted(Comparator.reverseOrder()).forEach(System.out::print); //71.85 56.98 42.89 33.78 23.58 21.12 17.13 12.45  
    }  
}
```

5. From the given list of integers, print the numbers which are multiples of 5?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        List<Integer> listOfIntegers = Arrays.asList(45, 12, 56, 15, 24, 75, 31, 89);  
        listOfIntegers.stream().filter(i -> i % 5 == 0).forEach(System.out::print); //45 15 75  
    }  
}
```

6. Given a list of integers, find maximum and minimum of those numbers?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> listOfIntegers = Arrays.asList(45, 12, 56, 15, 24, 75, 31, 89);
        int max = listOfIntegers.stream().max(Comparator.naturalOrder()).get();
        System.out.println("Maximum Element : "+max); //Maximum Element : 89
        int min = listOfIntegers.stream().min(Comparator.naturalOrder()).get();
        System.out.println("Minimum Element : "+min); //Minimum Element : 12
    }
}

```

7. How do you merge two unsorted arrays into single sorted array using Java 8 streams?

```

public class SampleTest {

    public static void main(String[] args) {
        int[] a = new int[] {4, 2, 7, 1};
        int[] b = new int[] {8, 3, 9, 5};
        int[] c = IntStream.concat(Arrays.stream(a), Arrays.stream(b)).sorted().toArray();
        System.out.println(Arrays.toString(c)); //[1, 2, 3, 4, 5, 7, 8, 9]
    }
}

```

8. How do you merge two unsorted arrays into single sorted array without duplicates?

```

public class SampleTest {

    public static void main(String[] args) {
        int[] a = new int[] {4, 2, 5, 1};
        int[] b = new int[] {8, 1, 9, 5};
        int[] c = IntStream.concat(Arrays.stream(a), Arrays.stream(b)).sorted().distinct().toArray(); //[1, 2, 4, 5, 8, 9]
        System.out.println(Arrays.toString(c));
    }
}

```

9. How do you get three maximum numbers and three minimum numbers from the given list of integers?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> listOfIntegers = Arrays.asList(45, 12, 56, 15, 24, 75, 31, 89);

        // 3 minimum Numbers
        listOfIntegers.stream().sorted().limit(3).forEach(System.out::print); //12 15 24

        // 3 Maximum Numbers
        listOfIntegers.stream().sorted(Comparator.reverseOrder()).limit(3).forEach(System.out::print); //89 75 56
    }
}

```

10. Java 8 program to check if two strings are anagrams or not?

```

public class SampleTest {
    public static void main(String[] args) {
        String s1 = "RaceCar";
        String s2 = "CarRace";

        s1 = Stream.of(s1.split("")).map(String::toUpperCase).sorted().collect(Collectors.joining());
        s2 = Stream.of(s2.split("")).map(String::toUpperCase).sorted().collect(Collectors.joining());

        if (s1.equals(s2)) {
            System.out.println("Two strings are anagrams"); //Two strings are anagrams
        } else {
            System.out.println("Two strings are not anagrams");
        }
    }
}

```

### 11. Find sum of all digits of a number in Java 8?

```

public class SampleTest {
    public static void main(String[] args) {
        int i = 15623;
        Integer sumOfDigits = Stream.of(String.valueOf(i).split("")).collect(Collectors.summingInt(Integer::parseInt));
        System.out.println(sumOfDigits); //17
    }
}

```

### 12. Find second largest number in an integer array?

```

public class SampleTest {
    public static void main(String[] args) {
        List<Integer> listOfIntegers = Arrays.asList(45, 12, 56, 15, 24, 75, 31, 89);
        Integer secondLargestNumber = listOfIntegers.stream().sorted(Comparator.reverseOrder()).skip(1).findFirst().get();
        System.out.println(secondLargestNumber); //75
    }
}

```

### 13. Given a list of strings, sort them according to increasing order of their length?

```

public class SampleTest {
    public static void main(String[] args) {
        List<String> listOfStrings = Arrays.asList("Java", "Python", "C#", "HTML", "Kotlin", "C++", "COBOL", "C");
        listOfStrings.stream().sorted(Comparator.comparing(String::length)).forEach(System.out::print); //C C# C++ Java HTML COBOL Python Kotlin
    }
}

```

### 14. Given an integer array, find sum and average of all elements?

```

public class SampleTest {

    public static void main(String[] args) {
        int[] a = new int[] {45, 12, 56, 15, 24, 75, 31, 89};
        int sum = Arrays.stream(a).sum();
        System.out.println("Sum = "+sum); //Sum = 347
        double average = Arrays.stream(a).average().getAsDouble();
        System.out.println("Average = "+average); //Average = 43.375
    }

}

```

15. How do you find common elements between two arrays?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> list1 = Arrays.asList(71, 21, 34, 89, 56, 28);
        List<Integer> list2 = Arrays.asList(12, 56, 17, 21, 94, 34);
        list1.stream().filter(list2::contains).forEach(System.out::print); //21 34 56
    }

}

```

16. Reverse each word of a string using Java 8 streams?

```

public class SampleTest {

    public static void main(String[] args) {
        String str = "Java Concept Of The Day";
        String reversedStr = Arrays.stream(str.split(" "))
            .map(word -> new StringBuffer(word).reverse())
            .collect(Collectors.joining(" "));
        System.out.println(reversedStr); //avaJ tpecnoC fO ehT yaD
    }

}

```

17. Reverse an integer array?

```

public class SampleTest {

    public static void main(String[] args) {
        Integer[] array = {1, 2, 3, 4, 5};
        List<Integer> list = Arrays.asList(array);
        Collections.reverse(list);
        Integer[] reversedArray = list.toArray(new Integer[0]);
        System.out.println(Arrays.toString(reversedArray)); //[5, 4, 3, 2, 1]
    }

}

```

18. How do you find sum of first 10 natural numbers?



```
public class SampleTest {

    public static void main(String[] args) {
        int sum = IntStream.range(1, 11).sum();
        System.out.println(sum); //55
    }
}
```

19. Print first 10 even numbers?

```
public class SampleTest {

    public static void main(String[] args) {
        IntStream.rangeClosed(1, 10).map(i -> i * 2).forEach(System.out::print); //2 4 6 8 10 12 14 16 18 20
    }
}
```

20. How do you find the most repeated element in an array?

```
public class SampleTest {

    public static void main(String[] args) {
        List<String> listOfStrings = Arrays.asList("Pen", "Eraser", "Note Book", "Pen", "Pencil", "Pen", "Note Book", "Pencil");
        Map<String, Long> elementCountMap = listOfStrings.stream()
            .collect(Collectors.groupingBy(word -> word, Collectors.counting()));
        Entry<String, Long> mostFrequentElement = elementCountMap.entrySet().stream().max(Map.Entry.comparingByValue()).get();
        System.out.println("Most Frequent Element : "+mostFrequentElement.getKey()); //Most Frequent Element : Pen
        System.out.println("Count : "+mostFrequentElement.getValue()); //Count : 3
    }
}
```

21. Given a list of strings, find out those strings which start with a number?

```
public class SampleTest {

    public static void main(String[] args) {
        List<String> listOfStrings = Arrays.asList("One", "Two", "Three", "Four", "Five", "Six");
        listOfStrings.stream().filter(str -> Character.isDigit(str.charAt(0))).forEach(System.out::print); //Two Three Five
    }
}
```

22. How do you extract duplicate elements from an array?

```
public class SampleTest {

    public static void main(String[] args) {
        List<Integer> listOfIntegers = Arrays.asList(111, 222, 333, 111, 555, 333, 777, 222);
        Set<Integer> uniqueElements = new HashSet<>();
        Set<Integer> duplicateElements = listOfIntegers.stream().filter(i -> !uniqueElements.add(i))
            .collect(Collectors.toSet());
        System.out.println(duplicateElements); //[333, 222, 111]
    }
}
```

23. Print duplicate characters in a string?

```

public class SampleTest {

    public static void main(String[] args) {
        String inputString = "Java Concept Of The Day".replaceAll("\\s+", "").toLowerCase();
        Set<String> uniqueChars = new HashSet<>();
        Set<String> duplicateChars =
            Arrays.stream(inputString.split(""))
                .filter(ch -> ! uniqueChars.add(ch))
                .collect(Collectors.toSet());

        System.out.println(duplicateChars); //[a, c, t, e, o]
    }
}

```

## 24. Find first repeated character in a string?

```

public class SampleTest {

    public static void main(String[] args) {
        String inputString = "Java Concept Of The Day".replaceAll("\\s+", "").toLowerCase();
        Map<String, Long> charCountMap =
            Arrays.stream(inputString.split(""))
                .collect(Collectors.groupingBy(word -> word, LinkedHashMap::new, Collectors.counting()));

        String firstRepeatedChar = charCountMap.entrySet()
            .stream()
            .filter(entry -> entry.getValue() > 1)
            .map(entry -> entry.getKey())
            .findFirst()
            .get();

        System.out.println(firstRepeatedChar); //a
    }
}

```

## 25. Find first non-repeated character in a string?

```

public class SampleTest {

    public static void main(String[] args) {
        String inputString = "Java Concept Of The Day".replaceAll("\\s+", "").toLowerCase();
        Map<String, Long> charCountMap =
            Arrays.stream(inputString.split(""))
                .collect(Collectors.groupingBy(word -> word, LinkedHashMap::new, Collectors.counting()));

        String firstRepeatedChar = charCountMap.entrySet()
            .stream()
            .filter(entry -> entry.getValue() == 1)
            .map(entry -> entry.getKey())
            .findFirst()
            .get();

        System.out.println(firstRepeatedChar); //j
    }
}

```

## 26. How do you get last element of an array?

```

public class SampleTest {

    public static void main(String[] args) {
        List<String> listOfStrings = Arrays.asList("One", "Two", "Three", "Four", "Five", "Six");
        String lastElement = listOfStrings.stream().skip(listOfStrings.size() - 1).findFirst().get();
        System.out.println(lastElement); //Six
    }
}

```

## 27. Find the age of a person in years if the birthday has given?

```

public class SampleTest {

    public static void main(String[] args) {
        LocalDate birthDay = LocalDate.of(1985, 01, 23);
        LocalDate today = LocalDate.now();
        System.out.println(ChronoUnit.YEARS.between(birthDay, today)); //40
    }
}

```

28. Given a list of integers, find out all the numbers starting with 1 using Stream functions?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> myList = Arrays.asList(10, 15, 8, 49, 25, 98, 32);
        myList.stream()
            .map(s -> s + "") // Convert integer to String
            .filter(s -> s.startsWith("1"))
            .forEach(System.out::println); //10 15
    }
}

```

29. How to find duplicate elements in a given integers list in java using Stream functions?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> myList = Arrays.asList(10,15,8,49,25,98,98,32,15);
        myList.stream().distinct().forEach(noDuplicateData -> System.out.print(noDuplicateData)); //10 15 8 49 25 98 32
    }
}

```

30. Given the list of integers, find the first element of the list using Stream functions?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> myList = Arrays.asList(10,15,8,49,25,98,98,32,15);
        myList.stream()
            .findFirst()
            .ifPresent(System.out::println); //10
    }
}

```

31. Given a list of integers, find the total number of elements present in the list using Stream functions?

```

public class SampleTest {

    public static void main(String[] args) {
        List<Integer> myList = Arrays.asList(10,15,8,49,25,98,98,32,15);
        long count = myList.stream()
            .count();
        System.out.println(count); //9
    }
}

```

32. Given a list of integers, find the maximum value element present in it using Stream functions?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        int[] arr = {10,15,8,49,25,98,98,32,15};  
        int maxdata = Arrays.stream(arr).boxed()  
            .max(Comparator.naturalOrder()).get();  
        System.out.println(maxdata); //98  
    }  
}
```

33. Given an integer array nums, return true if any value appears at least twice in the array, and return false if every element is distinct?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        int[] nums = {1,2,3,1};  
        Set<Integer> setData = new HashSet<>();  
        boolean flag = Arrays.stream(nums)  
            .anyMatch(num -> !setData.add(num));  
        System.out.println(flag); //true  
    }  
}
```

34. Write a Java 8 program to concatenate two Streams?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        List<String> list1 = Arrays.asList("Java", "8");  
        List<String> list2 = Arrays.asList("explained", "through", "programs");  
        Stream<String> concatStream = Stream.concat(list1.stream(), list2.stream());  
        concatStream.forEach(str -> System.out.print(str + " ")); //Java 8 explained through programs  
    }  
}
```

35. How to find only duplicate elements with its count from the String ArrayList in Java8?

```
public class SampleTest {  
  
    public static void main(String[] args) {  
        List<String> names = Arrays.asList("AA", "BB", "AA", "CC");  
        Map<String, Long> namesCount = names.stream()  
            .collect(Collectors.groupingBy(word -> word, Collectors.counting()))  
            .entrySet()  
            .stream()  
            .filter(entry -> entry.getValue() > 1)  
            .collect(Collectors.toMap(Map.Entry::getKey, Map.Entry::getValue));  
        System.out.println(namesCount); //{AA=2}  
    }  
}
```



### 36. In Given string find the max and min length word?

```
public class SampleTest {  
    public static void main(String[] args) {  
        String data = "I am learning streams api in java";  
  
        String maxLengthWord = Arrays.stream(data.split(" ")).max(Comparator.comparing(String::length)).get();  
        System.out.println("maxLengthWord : " + maxLengthWord); //maxLengthWord : learning  
        String minLengthWord = Arrays.stream(data.split(" ")).min(Comparator.comparing(String::length)).get();  
        System.out.println("minLengthWord : " + minLengthWord); //minLengthWord : I  
    }  
}
```

### 37. Remove duplicates from the string and return in the same order

```
public class SampleTest {  
    public static void main(String[] args) {  
        String data = "dabcadefg";  
        Arrays.stream(data.split("")).distinct().forEach(System.out::print); //dabcefg  
    }  
}
```

### 38. Find the word that has the second and third highest length words?

```
public class SampleTest {  
    public static void main(String[] args) {  
        String data = "I am learning streams api in java";  
  
        //Second highest word  
        String secondHighestLengthWord = Arrays.stream(data.split(" ")).sorted(Comparator.comparing(String::length).reversed()).skip(1).findFirst().get();  
        System.out.println("secondHighestLengthWord : " + secondHighestLengthWord); //secondHighestLengthWord : streams  
  
        //Third Highest word  
        String thirdHighestLengthWord = Arrays.stream(data.split(" ")).sorted(Comparator.comparing(String::length).reversed()).skip(2).findFirst().get();  
        System.out.println("thirdHighestLengthWord : " + thirdHighestLengthWord); // thirdHighestLengthWord : java  
    }  
}
```

### 39. Divide given integer list into lists of even and odd numbers?

```
public class SampleTest {  
    public static void main(String[] args) {  
        int [] arr = {1,2,3,4,5,6,7,8};  
  
        List<Integer> numsList = Arrays.stream(arr).boxed().toList();  
        List<List<Integer>> convertedList = numsList.stream().collect(Collectors.groupingBy(num -> num%2==0, Collectors.toList()))  
            .entrySet().stream().map(data -> data.getValue()).toList();  
        System.out.println(convertedList); //[1, 3, 5, 7], [2, 4, 8]  
    }  
}
```

### 40. Given an array, find the sum of unique elements?

```
public class SampleTest {  
    public static void main(String[] args) {  
        int[] arr = { 1, 2, 3, 4, 5, 6, 7, 8 };  
        System.out.println(Arrays.stream(arr).sum()); // 90  
    }  
}
```

#### 41. Given a string, find the first non-repeated character?

```
public class SampleTest {  
    public static void main(String[] args) {  
        String text = "Hello";  
  
        String firstNonRepeatedChar = Arrays.stream(text.split("")).collect(Collectors.groupingBy(word -> word, LinkedHashMap::new, Collectors.counting()))  
            .entrySet().stream().filter(map -> map.getValue()==1).map(data -> data.getKey()).findFirst().get();  
        System.out.println("firstNonRepeatedChar : " + firstNonRepeatedChar); //firstNonRepeatedChar : H  
    }  
}
```